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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,679	01/16/2001	Macmillan M. Wisler	414-16782-US	4076

7590 10/09/2003

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EXAMINER	
AURORA, REENA	

ART UNIT	PAPER NUMBER
2862	

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	09/760,679	WISLER ET AL.	
	Examiner	Art Unit	
	Reena Aurora	2862	

-- The MAILING DATE of this communication appears on the cover sh t with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2 - 14, 16 - 26, 28 - 34 and 36 - 41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2 - 14, 16 - 26, 28 - 34 and 36 - 41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2 – 14, 16 – 26, 28 – 34 and 36 – 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. (6,003,620) in view of Collins et al. (5,209,104) and further in view of Sinclair (4,996,489).

As to claims 8, 7, 23, 30 and 38, Sharma et al. (hereinafter referred to as Sharma) discloses a downhole in-situ measurement of physical and or chemical properties including fluid saturations of cores while coring having a cylindrical enclosure (12) for enclosing the material (26); at least one transmitter having an antenna (70) on the inside of the cylindrical enclosure for propagating electromagnetic radiation in the material; at least one receiver having an antenna (70) on the inside of the cylindrical enclosure for measuring electromagnetic radiation in the material indicating the parameter of interest; a core bit (18) operatively coupled to the cylindrical enclosure (12) for separating the material (26) from the subterranean formation (20); and a drilling tubular (21) for conveying the cylindrical enclosure into a borehole in the subterranean formation and the drilling tubular is selected from a drill string and coiled tubing (Note Fig. 1 Prior Art) and (Note Fig. 6, Column 7, Lines 3 - 33). Sharma further teaches electromagnetic, acoustic, fluid and differential pressure, temperature measurement

methods to measure the parameters of the core sample and measuring electromagnetic radiation in the material at each of the at least two frequencies (Column 7, lines 15 - 25). Sharma fails to disclose at least one receiver having antenna axially displaced from at least one transmitter antenna. Collins et al. (hereinafter referred to as Collins) discloses a method for desaturating a porous rock for electrical resistivity measurements including current-conducting electrodes (12, 16) axially separated form voltage electrodes (17, 18) for measuring a characteristic of a porous rock. Therefore, it is well known within the art to position axially separated electrode array or circumferentially spaced electrode array about a core sample for measuring a characteristic. Sinclair discloses a laboratory technique for measuring complex dielectric constant of rock core samples including a transmitting antenna (20) propagating electromagnetic radiation in the material and a receiver antenna 30) measuring electromagnetic radiation and testing the core sample for many frequencies (Fig. 1 and Column 4, Lines 4 – 8). Therefore, even though an electrode array to measure characteristic of a core sample in Sharma is not same as antenna. Sinclair shows transmitting and receiving antenna can also be used to measure characteristic of a core sample. This suggests that antennas or electrodes are both capable of determining characteristic of a core sample. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the device of Sharma in view of Collins which shows the axial separation of electrodes and further in view of Sinclair since it does not matter if the electrodes are axially displaced or transmitting and receiving antennas are axially displaced from each other for

determining the characteristic of the core sample since both would provide similar results and even though electrodes are not antenna, one can be used for the other.

3. As to claims 2 and 28, Sharma discloses a processor (36) for processing data measured by the receivers (Fig. 2A).

4. As to claims 3 and 29, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose the parameters to be measured are resistivity and dielectric constant of the material. Sinclair discloses laboratory technique for measuring complex dielectric constant of rock core samples as explained above wherein dielectric constant is one of the parameters of interest. Sinclair fails to disclose resistivity as one of the parameters of interest. However, it is well known in the art to measure attenuation between two receivers for determining the formation resistivity. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have determined resistivity of the formation along with the dielectric constant as a parameter of interest.

5. As to claims 4 – 6, Sharma discloses the material can be liquid, solid or gas (Column 2, Lines 20 - 23).

6. As to claims 9 and 32, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma further discloses flush mounting of the sensor array (Column 7, Lines 7 - 10). Sharma fails to disclose mounting of sensors in a circumferential recess on the inside of the cylindrical enclosure. However, positioning the transmitter in a circumferential recess would be

more stable than mounting the transmitter on the inside of the cylindrical enclosure. Therefore it would have been obvious to one of ordinary skill in the art to make the system of Sharma such that the transmitters are set in a circumferential recess on the inside of the cylindrical enclosure in order to securely position the transmitter in the cylindrical enclosure.

7. As to claim 12, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose antenna set in a plurality of apertures on the inside of the cylindrical enclosure. However it is common knowledge in the art that to use apertures for propagation of electromagnetic radiation. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have included a plurality of apertures on the inside of the cylindrical enclosure for propagating the desired mode of electromagnetic radiation to the antenna.

8. As to claims 10, 13 and 33, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose ferrite material positioned in the recess for shielding the cylindrical enclosure from electromagnetic radiation. However it is known ferrite surfaces boost the signal by directing more of the signal outward from the antenna. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have included ferrite material as a shielding material such that ferrite core protects the transmitter and receiver from damage and it also increases the transmission range of the system.

9. As to claims 11 and 14, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose an epoxy potting material for fixing the transmitter antenna in the recess. Sinclair discloses laboratory technique for measuring complex dielectric constant of rock core samples as explained above wherein epoxy potting is used for fitting elements together.

10. As to claims 16 – 26 and 36 – 41, the method claims are rejected on the same grounds as claims 2 – 14 and 28 – 34, since the method steps operate in the same functional manner as disclosed in the apparatus claims.

Response to Arguments

This communication is in response-to-response received on 8/25/03.

Applicant's arguments filed on 8/25/03 have been fully considered but they are not persuasive.

In response to applicant's arguments on page 3, 1st ¶, that "the antenna does not mean electrode". Sharma shows an electrode array (70) to measure current to determine physical properties of a core of an earth formation during coring operation (Column 7, lines 3 – 25, Fig. 6A). Sinclair shows measurement of a characteristic of a core sample using a transmitting antenna (20) and receiving antenna (30) (Column 4, lines 4 - 26). Collins shows a method of measuring a characteristic of a porous rock including two axially separated current conducting electrodes (12, 16). Even though electrode array to measure characteristic of a core sample in Sharma is not same as antenna. Sinclair shows transmitting and receiving antenna can also be used to

measure characteristic of a core sample. This suggests that antennas or electrodes are both capable of determining characteristic of a core sample. Therefore, it does not matter if the electrodes are axially displaced or transmitting and receiving antennas are axially displaced from each other for determining the characteristic of the core sample since both would provide similar results and even though electrodes are not antenna, one can be used for the other.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reena Aurora whose telephone number is 703-605-1372. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 703-308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Reena Aurora
October 1, 2003

N. Le
Supervisory Patent Examiner
Technology Center 2800